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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,530	01/23/2006	Teruo Kawabata	070469-0018	9913

53080 7590 05/12/2009

MCDERMOTT WILL & EMERY LLP
600 13TH STREET, NW
WASHINGTON, DC 20005-3096

EXAMINER	
YUN, CARINA	

ART UNIT	PAPER NUMBER
2193	

MAIL DATE	DELIVERY MODE
05/12/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/565,530	KAWABATA ET AL.	
	Examiner	Art Unit	
	CARINA YUN	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/30/2009, 11/06/2006, 1/23/2006.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The reference numbers of 332, 334 from Fig. 20 and reference numbers of 432, and 433 from Fig. 28 are not mentioned in the Specification. Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-23 and 25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claims 1-23, these claims are directed to a "program conversion device", but lack the necessary physical components (hardware) to constitute a machine or manufacture. Therefore, these claim limitations can be reasonably interpreted as computer program modules - software per se. Specifically, the specification discloses that the limitations of "transforming unit" and "placing unit" are merely software elements (See ¶ [0030-0033]). Since the specification provides intrinsic evidence of software, the claims are construed to cover software under the broadest reasonable interpretation. The claims are directed to functional descriptive material, per se, and hence non-statutory. See MPEP § 2106.01

Regarding claim 25, the claim is merely directed to "a program realizing a program conversion method", which is descriptive material per se, that is not recorded on any sort of computer-readable medium, thus making it non-statutory subject matter, see 33 F.3d at 1360, 31 USPQ2d at 1759 (MPEP 2106.01).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 5-6, and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Hobbs et al. (U.S. 2002/0199178 A1).

Regarding claim 1, Hobbs et al. teaches a program conversion device for a processor which has an instruction set including an instruction that waits for a predetermined response from an outside source when the instruction is executed *(see Fig. 1 and also ¶ [0020] and ¶ [0021] describing the device (e.g. computer) used to perform the compilation procedures)*, comprising: a loop structure transforming unit operable to perform double looping transformation so as to transform a structure of a loop *(see Fig.1 and double loop structure, see ¶ [0047])*, which is included in an input program and whose iteration count is x, into a nested structure where a loop whose iteration count is y is an inner loop and a loop whose iteration count is x/y is an outer loop *(see nested loop structure, ¶ [0047])*; and an instruction placing unit operable to convert the input program into an output program including the instruction by placing the instruction in a position outside the inner loop *(see Fig. 1; abstract and prefetch instruction outside inner loop, see ¶ [0051] and ¶ [0052])*.

Regarding claim 5, Hobbs et al. teaches the instruction is an instruction that has a possibility of causing an interlock *(see pre-fetch instruction, see ¶ [0051])*.

Regarding claim 6, Hobbs et al. that the instruction that has a possibility of causing an interlock is a prefetch instruction for prefetching data from main memory to a cache *(see 220, 230 in Fig. 3 and see ¶ [0033])*.

Regarding claim 23, Hobbs et al. teaches that the loop structure transforming unit is operable to further perform double looping transformation on an outer loop, considering an innermost loop as one block *(see ¶ [0039] describing that the loop may be transformed into separate loops with inner and outer loops, see ¶ [0047] showing example of double loop transformation)*.

Regarding claims 24 and 25, are method claims corresponding to independent claim 1, above. Therefore, these claims are rejected for the same reasons as indicated for claim 1.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2 and 7-14, 17-18, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hobbs et al. (U.S. 2002/0199178 A1) in view of Nishiyama (U.S. Pat No. 6,148,439).

Regarding claim 2, Hobbs et al. teaches that the loop structure transforming unit includes: a loop detecting unit operable to detect a loop included in the input program (*i.e. identify loop in a program, see ¶ [0010]*); an iteration count detecting unit operable to detect an iteration count of the detected loop (*i.e. iteration count of j, see ¶ [0030] and ¶ [0032]*). It is noted that Hobbs et al. does not specifically disclose a response wait cycle count detecting unit operable to detect the number of response wait cycles which is the number of cycles to wait for the predetermined response when the instruction is executed; a cycles-per-sequence detecting unit operable to detect the number of cycles per sequence required for one set of iteration processing of the detected loop; a loop splitting unit operable to split off, from the detected loop, a loop whose iteration count is derived from (the number of response wait cycles/the number of cycles per sequence); and a double looping transforming unit operable to perform double looping transformation so as to build a nested structure where the loop whose iteration count is derived

from (the number of response wait cycles/the number of cycles per sequence) is an inner loop and a loop whose iteration count is derived from (the iteration count of the detected loop/the iteration count of the inner loop) is an outer loop.

However, Nishiyama teaches a response wait cycle count detecting unit operable to detect the number of response wait cycles which is the number of cycles to wait for the predetermined response when the instruction is executed(*see col. 8, lines 54-59*); a cycles-per-sequence detecting unit operable to detect the number of cycles per sequence required for one set of iteration processing of the detected loop (*see col. 2, lines 44-50*); a loop splitting unit operable to split off, from the detected loop, a loop whose iteration count is derived from (the number of response wait cycles/the number of cycles per sequence) (*see col. 2, lines 50-55*); and a double looping transforming unit operable to perform double looping transformation so as to build a nested structure where the loop whose iteration count is derived from (the number of response wait cycles/the number of cycles per sequence) is an inner loop and a loop whose iteration count is derived from (the iteration count of the detected loop/the iteration count of the inner loop) is an outer loop (*see col. 3, lines 5-24*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Nishiyama because Nishiyama teaching regarding loop splitting would add to Hobbs et al. teachings of loop optimization.

Regarding claim 7, Hobbs et al. teaches a scheduling unit operable to perform instruction scheduling (*i.e. the generator modifies the code such that the code reflects scheduling and other low-level optimization, see ¶ [0022]*). However, Hobbs et al. does not specifically disclose that the loop structure transforming unit is operable to split off, from the loop whose iteration count is

x, a loop whose iteration count is y and which is executed corresponding to the number of cycles required to execute the prefetch instruction, based on a result obtained by the scheduling unit, and operable to perform double looping transformation so as to build a nested structure where the loop whose iteration count is y is an inner loop and a loop whose iteration count is x/y is an outer loop.

However, Nishiyama teaches that the loop structure transforming unit is operable to split off, from the loop whose iteration count is x, a loop whose iteration count is y and which is executed corresponding to the number of cycles required to execute the prefetch instruction, based on a result obtained by the scheduling unit, and operable to perform double looping transformation so as to build a nested structure where the loop whose iteration count is y is an inner loop and a loop whose iteration count is x/y is an outer loop (*see col. 3, lines 35-45*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Nishiyama because Nishiyama teaching regarding loop splitting would add to Hobbs et al. teachings of loop optimization.

Regarding claim 8, Hobbs et al. does not specifically disclose that after the instruction is executed, a plurality of cycles are required until a time comes when a predetermined resource will be referable. However, Nishiyama teaches that after the instruction is executed, a plurality of cycles are required until a time comes when a predetermined resource will be referable (*see col. 3, lines 9-18*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Nishiyama because Nishiyama teaching of cycles would add to Hobbs et al. teachings of loop optimization.

Regarding claim 9, Hobbs et al. teaches that the instruction that requires the plurality is an instruction for accessing one of main memory and a cache (*see 220 cache and 230 memory in Fig. 3 and ¶ [0024] which describes the instruction set in Fig. 3*).

Regarding claim 10, Hobbs et al. does not specifically disclose that the loop structure transforming unit is operable to split off, from the loop whose iteration count is x, the loop whose iteration count is y and which is executed in accordance with an advance in a cache line size made by an address of an array referenced within the loop whose iteration count is x, and operable to perform double looping transformation so that the loop whose iteration count is y is an inner loop and the loop whose iteration count is x/y is an outer loop.

However, Nishiyama teaches that the loop structure transforming unit is operable to split off, from the loop whose iteration count is x, the loop whose iteration count is y and which is executed in accordance with an advance in a cache line size made by an address of an array referenced within the loop whose iteration count is x, and operable to perform double looping transformation so that the loop whose iteration count is y is an inner loop and the loop whose iteration count is x/y is an outer loop (*see col. 3, lines 35-45*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Nishiyama because Nishiyama teaching regarding loop splitting would add to Hobbs et al. teachings of loop optimization.

Regarding claim 11, Hobbs et al. does not specifically disclose that when a plurality of arrays are present, the loop structure transforming unit is operable to further perform, in accordance with the number of the arrays, proportional dividing transformation to proportionally divide the loop whose iteration count is y and on which the double looping transformation has

been performed. However, Nishiyama teaches that when a plurality of arrays are present, the loop structure transforming unit is operable to further perform, in accordance with the number of the arrays, proportional dividing transformation to proportionally divide the loop whose iteration count is y and on which the double looping transformation has been performed (*see Fig. 15, Examiner notes a plurality of arrays are shown in the drawing, the loop is proportionally divided, see also col. 3, lines 35-45*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Nishiyama because Nishiyama teaching regarding loop dividing would add to Hobbs et al. teachings of loop optimization.

Regarding claim 12, Hobbs et al. does not specifically disclose that when sizes of array elements of the plurality of arrays are different, the loop whose iteration count is y is proportionally divided in the proportional dividing transformation in accordance with a ratio of the sizes. However, Nishiyama teaches that when sizes of array elements of the plurality of arrays are different, the loop whose iteration count is y is proportionally divided in the proportional dividing transformation in accordance with a ratio of the sizes (*see col. 3, lines 30-35*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Nishiyama because Nishiyama teaching regarding loop size would add to Hobbs et al. teachings of loop optimization.

Regarding claim 13, Hobbs et al. does not specifically disclose that when each stride of the plurality of arrays is different, a stride referring to addresses advanced per set of the iteration processing of the loop, the loop whose iteration count is y is proportionally divided in the proportional dividing transformation in accordance with a ratio of the strides. However,

Nishiyama teaches that when each stride of the plurality of arrays is different, a stride referring to addresses advanced per set of the iteration processing of the loop, the loop whose iteration count is y is proportionally divided in the proportional dividing transformation in accordance with a ratio of the strides (*see Fig. 15 and col. 3, lines 30-35; Examiner notes the arrays are different sizes, see 1501, 1502, and are proportionally divided*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Nishiyama because Nishiyama teaching regarding loop dividing would add to Hobbs et al. teachings of loop optimization.

Regarding claim 14, Hobbs et al. does not specifically disclose that when an inner loop is transformed, a conditional statement is generated for each divided loop and the proportional dividing transformation is performed so that each divided loop is executed within a same inner loop. However, Nishiyama teaches that when an inner loop is transformed, a conditional statement is generated for each divided loop and the proportional dividing transformation is performed so that each divided loop is executed within a same inner loop (*see Fig. 3B, conditional IF statement*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Nishiyama because Nishiyama teaching regarding loop dividing would add to Hobbs et al. teachings of loop optimization.

Regarding claim 17, Hobbs et al. teaches that when an execution count of a loop is non-fixed, the loop structure transforming unit is operable to judge the execution count of the loop when the loop is executed and to perform double looping transformation so as to dynamically

vary an iteration count in accordance with a judgment result (*see ¶ [0052-0053]; Examiner notes the code segment shows the variable loop, the double looping transformation*).

Regarding claim 18, Hobbs et al. teaches further comprising a receiving unit operable to receive information showing that arrays are aligned to a cache line size, that the instruction placing unit is operable to place a prefetch instruction in the loop, whose iteration count is x, for prefetching data stored one cache line ahead of data to be referenced within the iteration processing of the loop that is executed x number of times (*i.e. loop optimization with prefetch, relating to size of cache memory is described. see ¶[0040] and ¶[0041]*).

Regarding claim 20, Hobbs et al. teaches that when the arrays are not aligned to the cache line size, the instruction placing unit is operable to place a prefetch instruction in the loop, whose iteration count is x, for prefetching data stored two cache lines ahead of data to be referenced within the iteration processing of the loop that is executed x number of times (*i.e. loop optimization with prefetch, relating to size of cache memory is described. see ¶[0040] and ¶[0041]*).

Regarding claim 21, Hobbs et al. teaches that when the arrays are not aligned to the cache line size, the loop structure transforming unit is operable to judge a relative position in a cache line, from which the array starts to access, and operable to perform double looping transformation in accordance with a judgment result (*see ¶ [0040]*).

Regarding claim 22, Hobbs et al. teaches further comprising a receiving unit operable to receive information that relates to a focused array (*i.e. arrays that are allocated, see ¶ [0032]*), that the loop structure transforming unit is operable to perform double looping transformation only on the focused array (*i.e. loop restructuring, see ¶ [0033]*).

9. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hobbs et al. (U.S. 2002/0199178 A1) in view of Ogawa et al. (U.S. Pub No. 2004/0098713 A1).

Regarding claim 3, Hobbs et al. does not specifically disclose further comprising an optimization directive information receiving unit operable to receive optimization directive information which relates to optimization. However, Ogawa et al. teaches further comprising an optimization directive information receiving unit operable to receive optimization directive information which relates to optimization (*i.e #pragma_min_iteration directive, see ¶ [0355]*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al. and Ogawa et al. because Ogawa et al. teaching of optimization directive information would improve the optimization technique used for loop optimization.

Regarding claim 4, Hobbs et al. teaches the loop structure transforming unit is operable to, when an execution count of the loop is non-fixed, extract iteration processing having the minimum iteration count from the loop on the basis of the minimum iteration count and to perform double looping transformation on the extracted iteration processing of the loop (*see ¶ [0052]; Examiner notes the double loop structure is shown and minimum iteration count is 1, and loop is variable*). It is noted that Hobbs et al. does not specifically disclose that the optimization directive information receiving unit is operable to receive a minimum iteration count of the loop included in the input program. However, Ogawa et al. teaches that the optimization directive information receiving unit is operable to receive a minimum iteration count of the loop included in the input program (*i.e #pragma_min_iteration directive, see ¶ [0355]*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the

invention was made to combine the teachings of Hobbs et al. and Ogawa et al. because Ogawa et al. teaching of optimization directive information would improve the optimization technique used for loop optimization.

10. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hobbs et al. (U.S. 2002/0199178 A1) in view of Nishiyama (U.S. Pat No. 6,148,439) and further in view of Liu et al. (U.S. Pat No. 6,070,011).

Regarding claim 15, Hobbs et al. and Nishiyama do not specifically disclose that when the loop whose iteration count is y is split off from the loop whose iteration count is x and a remainder z left over after a calculation of x/y is not zero, the loop structure transforming unit is operable to perform peeling processing and then double looping transformation on iteration processing that is to be executed z number of times. However, Liu et al. teaches that when the loop whose iteration count is y is split off from the loop whose iteration count is x and a remainder z left over after a calculation of x/y is not zero, the loop structure transforming unit is operable to perform peeling processing and then double looping transformation on iteration processing that is to be executed z number of times (*i.e. loop peeling technique used with conditional, see col. 4, lines 37-49*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al., Nishiyama and Liu et al. because Liu et al. teaching of loop peeling would improve the loop optimization technique in Hobbs et al. and Nishiyama teachings.

Regarding claim 16, Hobbs et al. and Nishiyama do not specifically disclose that when the remainder z is not zero, the loop structure transforming unit is operable to generate a conditional statement for judging whether a loop count of an inner loop is y or z and to perform

double looping transformation. However, Liu et al. teaches that when the remainder z is not zero, the loop structure transforming unit is operable to generate a conditional statement for judging whether a loop count of an inner loop is y or z and to perform double looping transformation (*see code segment described in col. 7, lines 6-35; Examiner notes IF/ELSE conditional statement is shown, along with looping transformation*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al., Nishiyama and Liu et al. because Liu et al. teaching of loop peeling would improve the loop optimization technique in Hobbs et al. and Nishiyama teachings.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hobbs et al. (U.S. 2002/0199178 A1) in view of Nishiyama (U.S. Pat No. 6,148,439) and further in view of Ogawa et al. (U.S. Pub No. 2004/0098713 A1).

Regarding claim 19, Hobbs et al. teaches the loop structure transforming unit is operable to perform the double looping transformation in accordance with the information (*see double looping transformation, ¶ [0047]*). It is noted that Hobbs et al. and Nishiyama do not specifically disclose that the optimization directive information receiving unit is operable to receive information showing a relative position in a cache line, from which the array starts to access. However, Ogawa et al. teaches that the optimization directive information receiving unit is operable to receive information showing a relative position in a cache line, from which the array starts to access (*i.e. the compiler according to the present invention receives a directive on alignment for allocating array data to the memory region and performs optimization following the directive, see ¶ [0020]*). Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Hobbs et al., Nishiyama and

Ogawa et al. because Ogawa et al. teaching of optimization directive information would improve the optimization technique used for loop optimization.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Click et al. (U.S. Pub. No. 2004/0015917 A1) teaches a system and method for range check elimination via iteration splitting in a dynamic compiler.

Schooler (U.S. Patent No. 6,038,398) teaches a method and apparatus for improving performance of a program using loop interchange, loop distribution, loop interchange sequence.

Santhanam (U.S. Patent No. 5,704,053) teaches a method of efficient prefetching analysis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARINA YUN whose telephone number is (571)270-7848. The examiner can normally be reached on Mon-Thur, 9.30am-6.30pm; alt. Fri, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LEWIS BULLOCK can be reached on (571)272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C.Y./
Art Unit 2193

/Lewis A. Bullock, Jr./
Supervisory Patent Examiner, Art Unit 2193